

# TEST REPORT

**Product Name : Smart Lock U300**

**Model Number : DL-D02E, DL-D02D**

Prepared for : Lumi United Technology Co., Ltd  
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Report Number : EDG2404300196E01101R  
Date(s) of Tests : April 30, 2024 to May 30, 2024  
Date of issue : May 31, 2024



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## TEST REPORT VERIFICATION

Applicant : Lumi United Technology Co., Ltd  
Manufacturer : Lumi United Technology Co., Ltd  
EUT : Smart Lock U300  
Model No. : DL-D02E, DL-D02D  
Rating : DC 6V from battery  
DC 5V from USB

### Measurement Procedure Used:

AS/NZS CISPR 14.1: 2021

The device described above is tested by EMTEK(DONGGUAN) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK(DONGGUAN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the AS/NZS CISPR 14.1 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK(DONGGUAN) CO., LTD.

Date of Test :

April 30, 2024 to May 31, 2024



Prepared by :

Galen Xiao / Editor



Reviewer :

Tim Dong / Supervisor



Sam Lv / Manager

Approved & Authorized Signer :

## Modified Information

Version	Summary	Revision Date	Report No.
	Original Report	/	EDG2404300196E01101R



## 1. DESCRIPTION OF STANDARDS AND RESULTS

<b>EMISSION</b>			
Description of Test Item	Standard	Limits	Results
Conducted Disturbances at the AC mains port	AS/NZS CISPR 14.1: 2021	Table 5	PASS
Discontinuous Disturbance (Click)	AS/NZS CISPR 14.1: 2021	Clause 4.4	N/A
Disturbance Power (30 MHz to 300 MHz )	AS/NZS CISPR 14.1: 2021	Table 7,Table 8	N/A
Radiated Emission (30 MHz to 1000 MHz)	AS/NZS CISPR 14.1: 2021	Table 9	PASS
Radiated Emission (1 GHz to 6 GHz)	AS/NZS CISPR 14.1: 2021	Table 11	N/A

Note: N/A is an abbreviation for Not Applicable.

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

EUT : Smart Lock U300

Model Number : DL-D02E, DL-D02D

All models are the same, except the model name. Here, DL-D02E is selected to test all the test items.

Trade Mark : Aqara

Power Supply For Test : DC 6V from battery  
DC 5V from USB

Operate Mode : Charging, On

EUT Category :  Category I  Category II  Category III  
 Category IV  Category V

Highest clock frequency :   $F \leq 15\text{MHz}$ ,   $15\text{MHz} < F \leq 200\text{MHz}$ ,   $F > 200\text{MHz}$

Applicant : Lumi United Technology Co., Ltd

Address : Room 801-804, Building 1, Chongwen Park, Nanshan iPark, No. 3370, Liuxian Avenue, Fuguang Community, Taoyuan Residential District, Nanshan District, Shenzhen, China

Manufacturer : Lumi United Technology Co., Ltd

Address : Room 801-804, Building 1, Chongwen Park, Nanshan iPark, No. 3370, Liuxian Avenue, Fuguang Community, Taoyuan Residential District, Nanshan District, Shenzhen, China

Date of sample received : April 30, 2024

Date of Test : April 30, 2024 to May 30, 2024

## 2.2. Description of Test Facility

Site Description	
EMC Lab	: Accredited by CNAS, 2020.08.27 The certificate is valid until 2024.07.05 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2018 The Certificate Registration Number is L3150
Name of Firm	: EMTEK(DONGGUAN) CO., LTD.
Site Location	: -1&2/F., Building 2, Zone A, Zhongda Marine Biotechnology Reserch and Development Base, No.9, Xincheng Avenue, Songshanlu High-technology Industrial Development Zone, Dongguan, Guangdong, China

## 2.3. Description of Support Device

/ : /

## 2.4. Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission	: 2.08dB(9k~150kHz Conduction 1#) 2.42dB(150k-30MHz Conduction 1#)
Radiated Emission (3m Chamber)	: 3.32dB (30M~1GHz Polarize: H) 3.34dB (30M~1GHz Polarize: V)
Uncertainty for Flicker test	: 0.07%
Uncertainty for Harmonic test	: 1.8%
Uncertainty for test site temperature and humidity	: 0.6°C 4%

### 3. MEASURING DEVICES AND TEST EQUIPMENT

#### 3.1. For Conducted Emission at Mains Terminals Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde&Schwarz	ESCI	100137	2024/4/29	1 Year
2.	AMN	Rohde&Schwarz	ENV216	101209	2024/4/28	1 Year

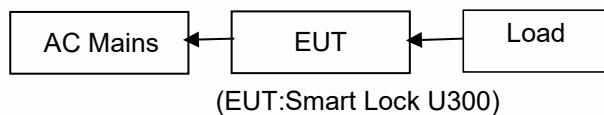
#### 3.2. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde&Schwarz	ESCI	101415	2024/4/28	1 Year
2.	Bi-log Hybrid Antenna	Schwarzbeck	VULB9163	141	2024/5/5	1 Year
3.	Pre-Amplifie	HP	8447F	OPTH64	2024/4/28	1 Year
4.	Signal Analyzer	R&S	FSV30	103039	2024/4/28	1 Year
5.	Horn Antenna	Schwarzbeck	BBHA9120D	1272	2024/5/5	1 Year
6.	Pre-Amplifie	LUNAR EM	PM1-18-40	J10100000081	2024/4/28	1 Year

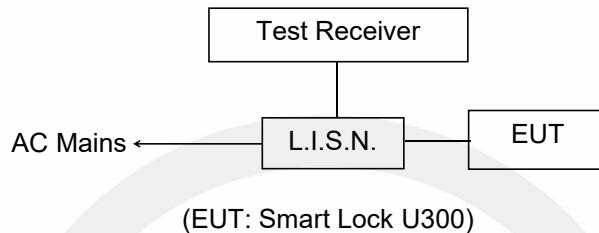
## 4. CONDUCTED DISTURBANCES AT THE AC MAINS PORT

### 4.1. Block Diagram of Test Setup

#### 4.1.1. Block diagram of connection between the EUT and simulators



#### 4.1.2. Block Diagram of Test Setup



### 4.2. Measurement Standard and Limits

#### 4.2.1. Standard:

AS/NZS CISPR 14.1: 2021

#### 4.2.2. Limits

Frequency (MHz)	Limit (dB $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56 *	59 ~ 46 *
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

1. At the transition frequency the lower limit applies.
2. \* decreasing linearly with logarithm of the frequency.

### 4.3. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet AS/NZS CISPR 14.1 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Smart Lock U300  
Model Number : DL-D02E, DL-D02D

### 4.4. Operating Condition of EUT

Step 1: Setup the EUT as shown in Section 4.1.

Step 2: Turn on the power of all equipments.

Step 3: Let the EUT work in measuring mode (Full load, Half load, Empty load) and measure them.

#### 4.5. Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground and connected to the AC mains through a Line Impedance Stabilization Network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission according to the AS/NZS CISPR 14.1 regulations during conducted emission measurement.

The bandwidth of the test receiver (ESCI) is set at 200Hz in 9KHz~150KHz range and 9KHz in 150KHz~30MHz range.

The frequency range from 150KHz to 30MHz is checked.

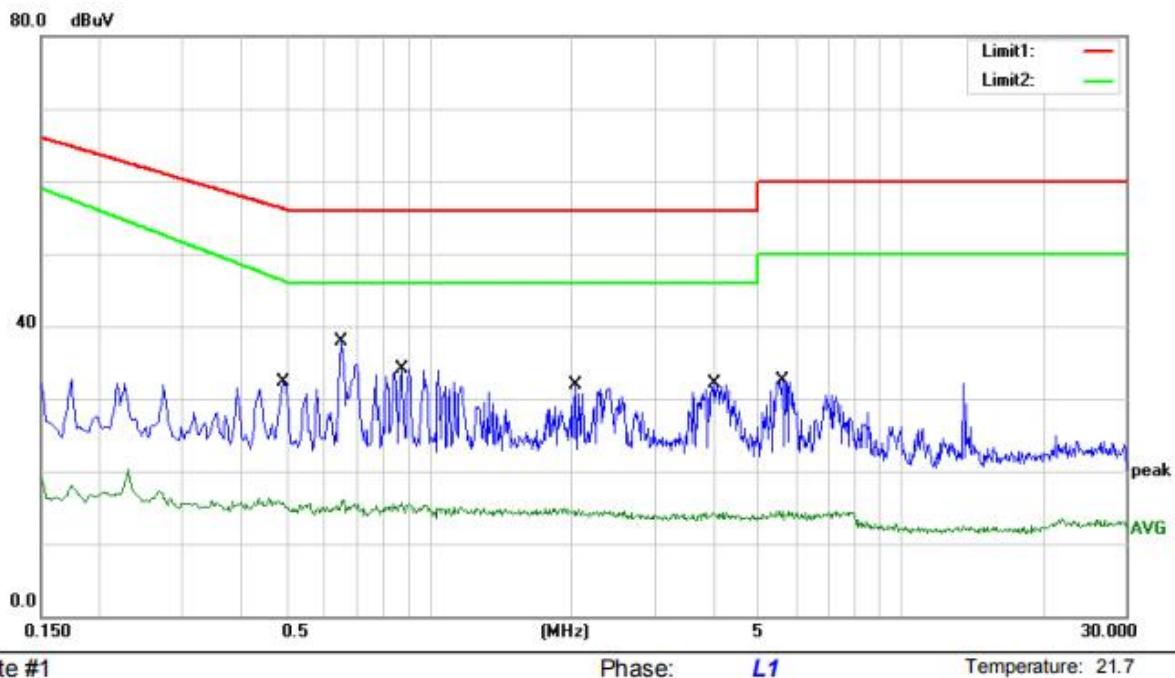
#### 4.6. Measurement Results

**PASS.**

The frequency range from 150KHz to 30MHz is investigated.

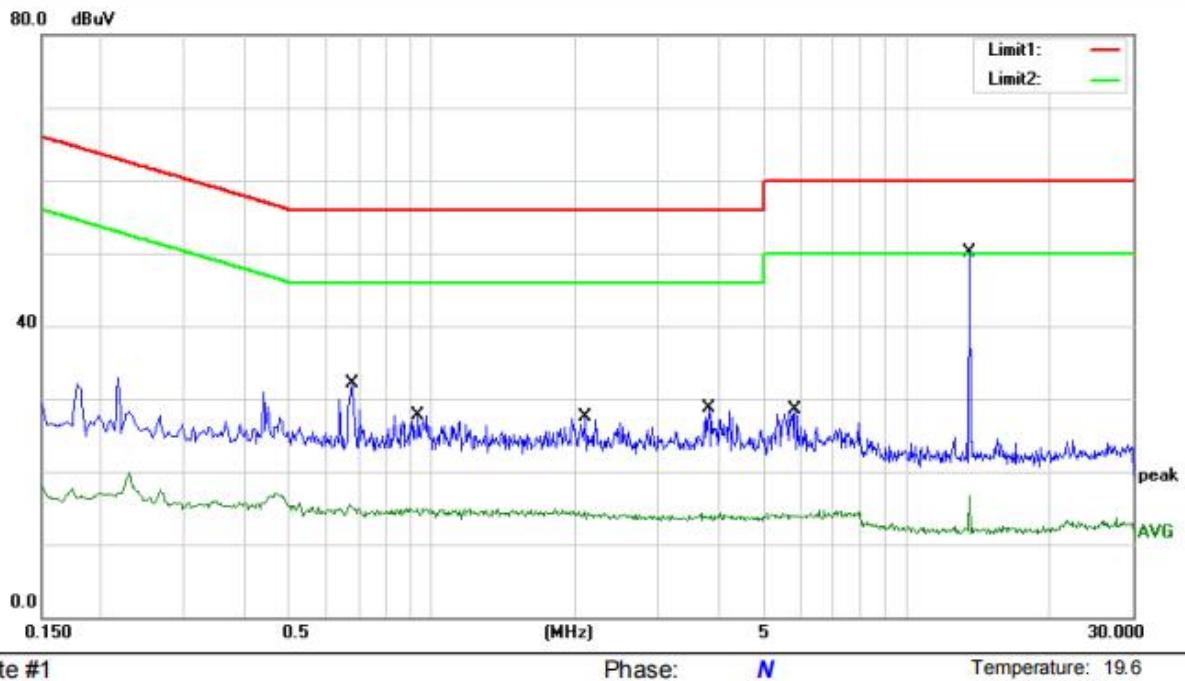
The worst test data are attach on follow page.





No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4900	15.12	17.10	32.22	56.17	-23.95	QP	
2		0.4900	-1.32	17.10	15.78	46.22	-30.44	AVG	
3 *		0.6540	20.89	17.03	37.92	56.00	-18.08	QP	
4		0.6540	-1.08	17.03	15.95	46.00	-30.05	AVG	
5		0.8740	17.06	17.02	34.08	56.00	-21.92	QP	
6		0.8740	-1.29	17.02	15.73	46.00	-30.27	AVG	
7		2.0500	14.80	17.11	31.91	56.00	-24.09	QP	
8		2.0500	-2.58	17.11	14.53	46.00	-31.47	AVG	
9		4.0260	15.09	16.98	32.07	56.00	-23.93	QP	
10		4.0260	-2.67	16.98	14.31	46.00	-31.69	AVG	
11		5.6060	15.55	16.98	32.53	60.00	-27.47	QP	
12		5.6060	-2.43	16.98	14.55	50.00	-35.45	AVG	

\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: Jian

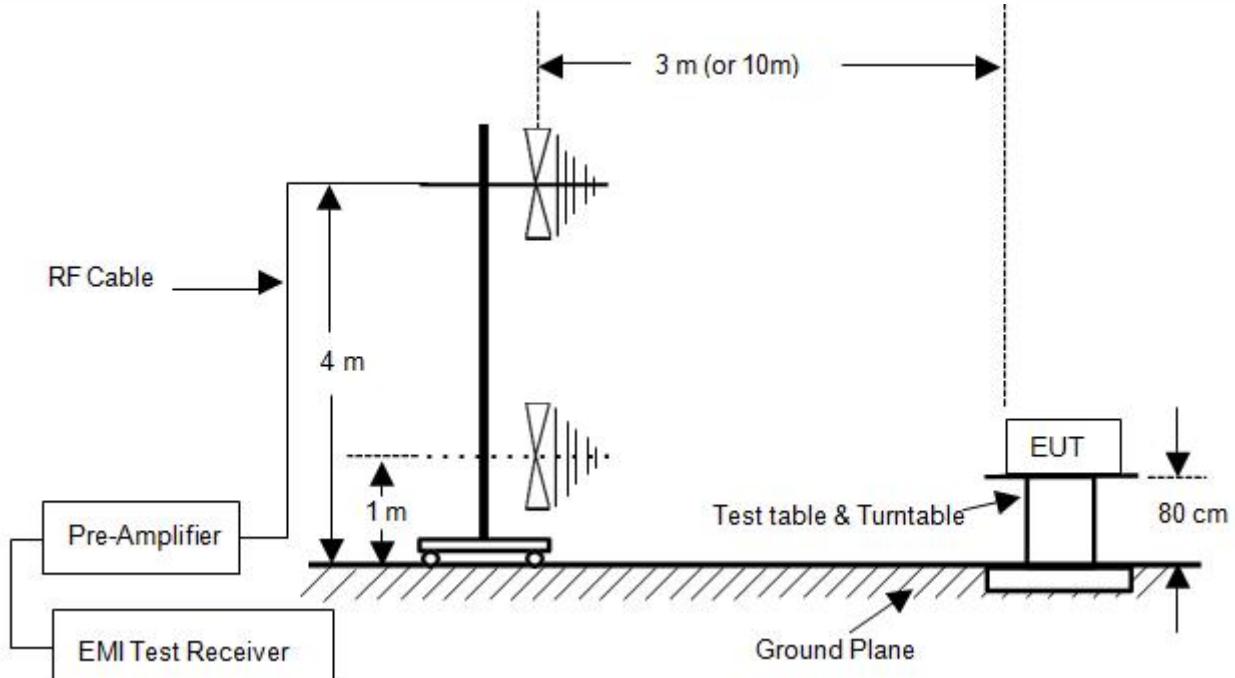


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
1		0.6780	14.98	17.02	32.00	56.00	-24.00	QP	
2		0.6780	-1.58	17.02	15.44	46.00	-30.56	AVG	
3		0.9340	10.70	17.03	27.73	56.00	-28.27	QP	
4		0.9340	-2.04	17.03	14.99	46.00	-31.01	AVG	
5		2.1100	10.48	17.10	27.58	56.00	-28.42	QP	
6		2.1100	-2.66	17.10	14.44	46.00	-31.56	AVG	
7		3.8380	11.81	16.99	28.80	56.00	-27.20	QP	
8		3.8380	-3.02	16.99	13.97	46.00	-32.03	AVG	
9		5.8220	11.48	17.00	28.48	60.00	-31.52	QP	
10		5.8220	-3.01	17.00	13.99	50.00	-36.01	AVG	
11 *		13.5580	33.20	16.92	50.12	60.00	-9.88	QP	
12		13.5580	-0.24	16.92	16.68	50.00	-33.32	AVG	

\*:Maximum data    x:Over limit    !:over margin      Comment: Factor build in receiver.      Operator: Jian

## 5. RADIATED EMISSION MEASUREMENT (UP TO 1GHz)

### 5.1. Block Diagram of Test Setup



### 5.2. Radiated Limit

AS/NZS 61000.6.3: 2021, Table 3.1

Frequency range MHz	Measurement			Limits dB( $\mu$ V/m)
	Facility	Distance (m)	Detector type / bandwidth	
30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	30
230 to 1 000				37
30 to 230	OATS/SAC	3	Quasi Peak / 120 kHz	40
230 to 1 000				47

### 5.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters (or 10 meters) away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the

maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had been found and that the associated cable and EUT configuration and mode of operation had been identified.

The bandwidth of the Receiver is set at 120 kHz.

Test results were obtained from the following equation:

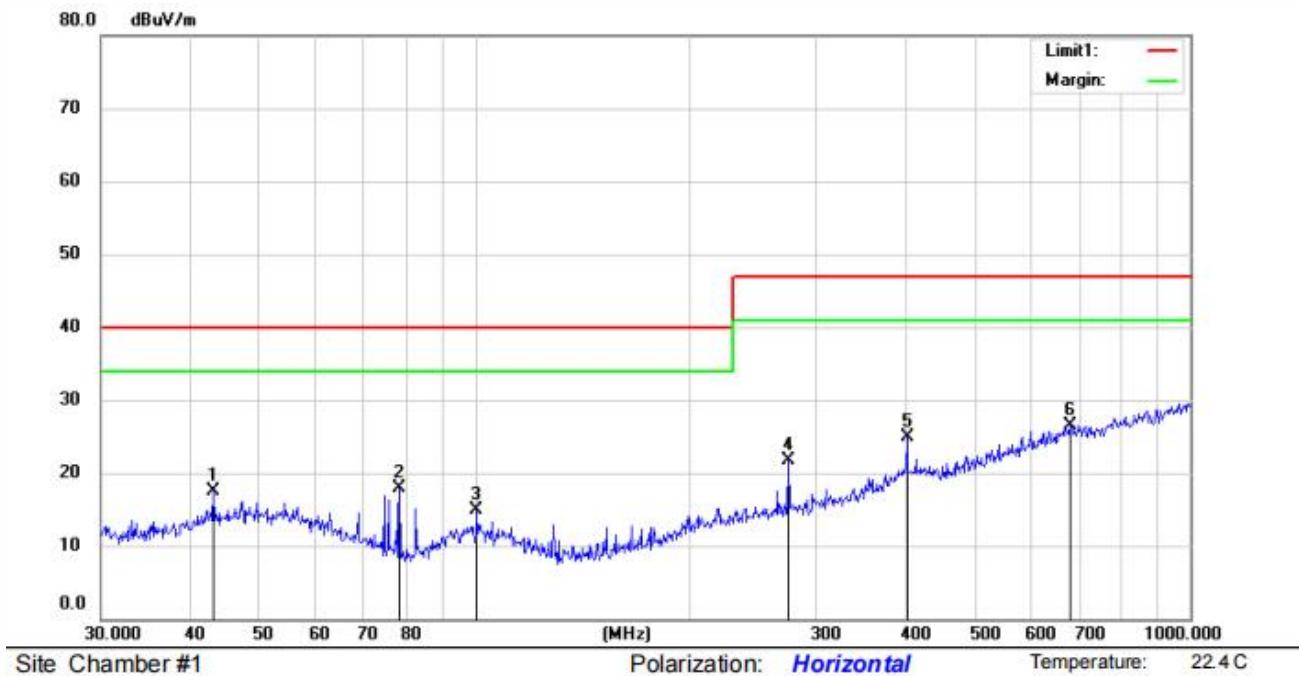
Emission level (dB $\mu$ V/m) = Antenna Factor -Amp Factor +Cable Loss + Reading

Margin (dB) = Emission Level (dB $\mu$ V/m) - Limit (dB $\mu$ V/m)

#### 5.4. Measuring Results

**Pass.**

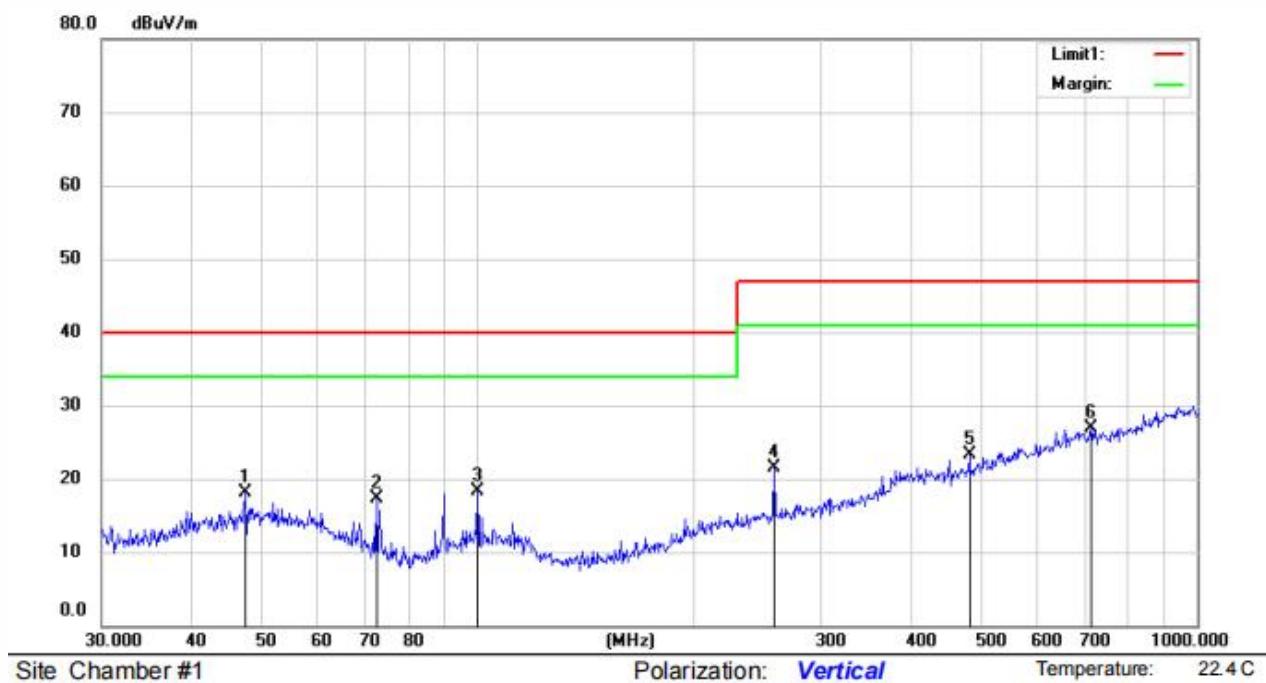
The data are attached the following pages.



No.	Mk.	Freq. MHz	Reading Level dBuV	Ant. Factor dB/m	Pre Amp Gain dB	Cable loss dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB Detector	HI cm	Degree deg.	Comment
1		43.0504	33.89	13.45	30.51	0.67	17.50	40.00	-22.50	QP		
2		78.4133	39.36	8.09	30.58	1.06	17.93	40.00	-22.07	QP		
3		100.5806	33.03	11.59	30.89	1.08	14.81	40.00	-25.19	QP		
4		274.1938	36.08	13.44	29.97	2.14	21.69	47.00	-25.31	QP		
5		401.8383	34.78	16.32	29.82	3.66	24.94	47.00	-22.06	QP		
6	*	679.9600	31.70	21.44	30.07	3.48	26.55	47.00	-20.45	QP		

\*:Maximum data    x:Over limit    !:over margin

Operator: Ccyf



No.	Mk.	Freq. MHz	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure- ment	Limit	Over	HI	Degree	Comment
			dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	
1		47.4917	33.90	13.9	30.49	0.74	18.05	40.00	-21.95	QP		
2		72.3375	37.52	9.25	30.56	1.1	17.31	40.00	-22.69	QP		
3		99.8777	36.57	11.58	30.89	1.08	18.34	40.00	-21.66	QP		
4		258.3263	36.30	13.15	30.05	2.13	21.53	47.00	-25.47	QP		
5		482.2155	32.81	17.48	29.81	2.8	23.28	47.00	-23.72	QP		
6	*	711.6734	31.87	21.54	30.12	3.56	26.85	47.00	-20.15	QP		

\*:Maximum data    x:Over limit    !:over margin

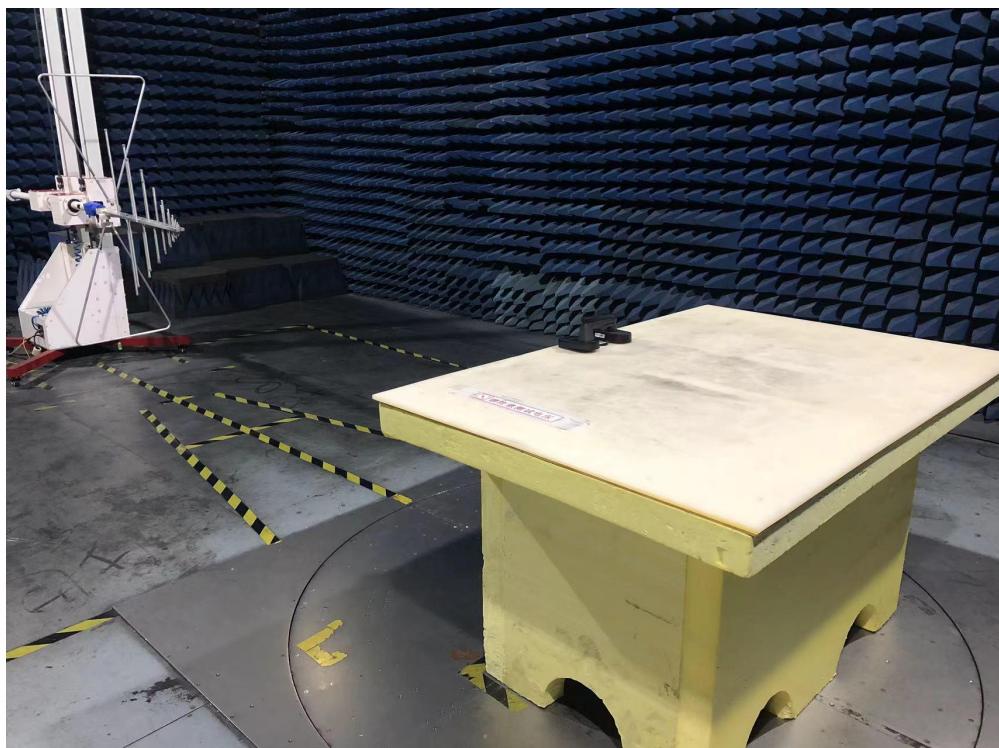
Operator: Ccyf

## 6. PHOTOGRAPH

### 6.1..Photo of Conducted Emission



## 6.2. Photo of Radiated Emission



**APPENDIX  
(Photos of EUT)**



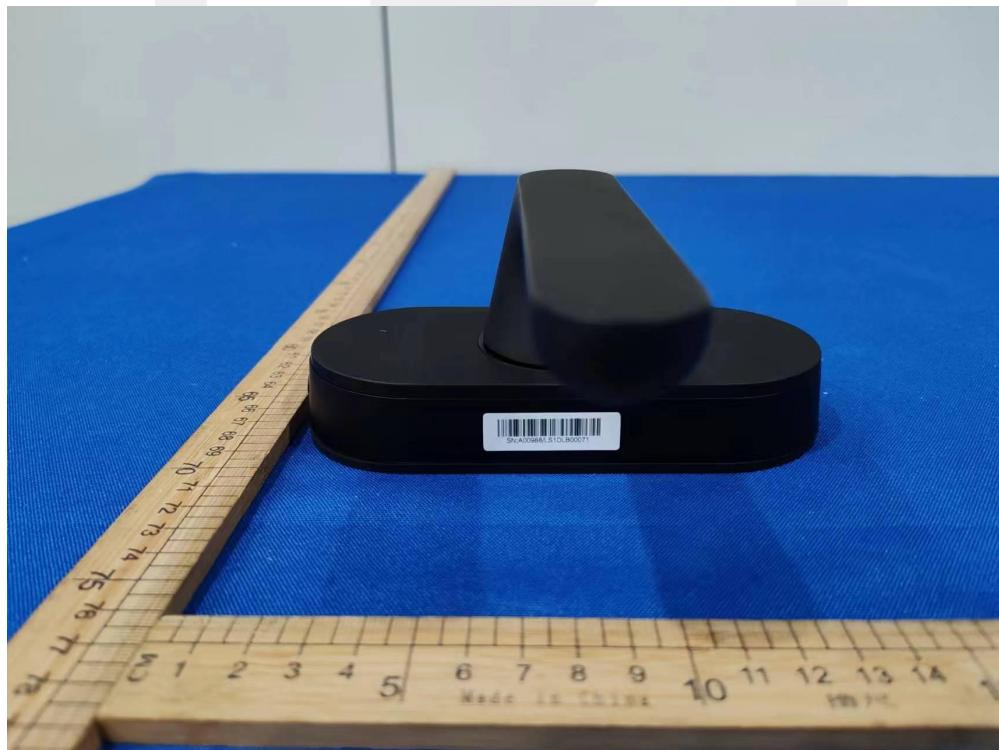


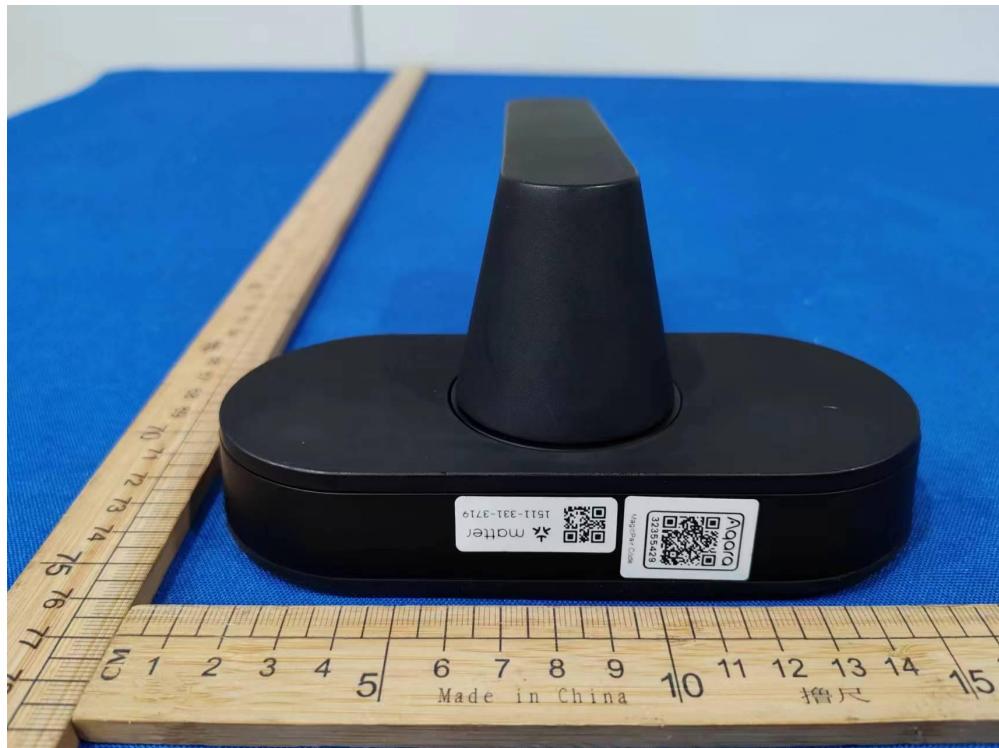




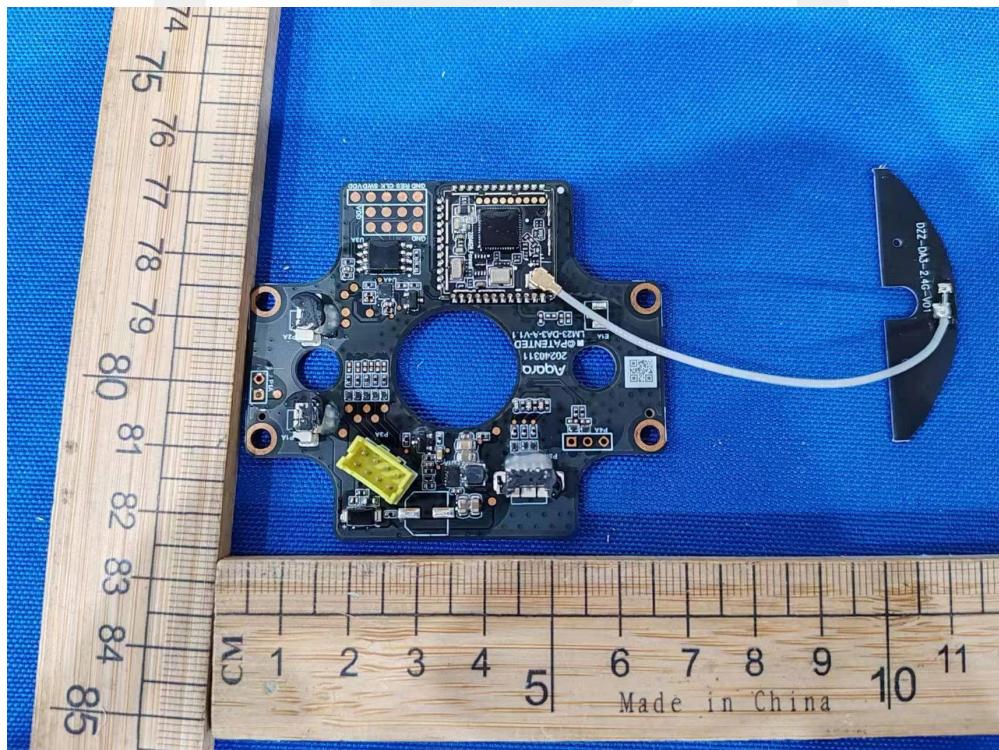


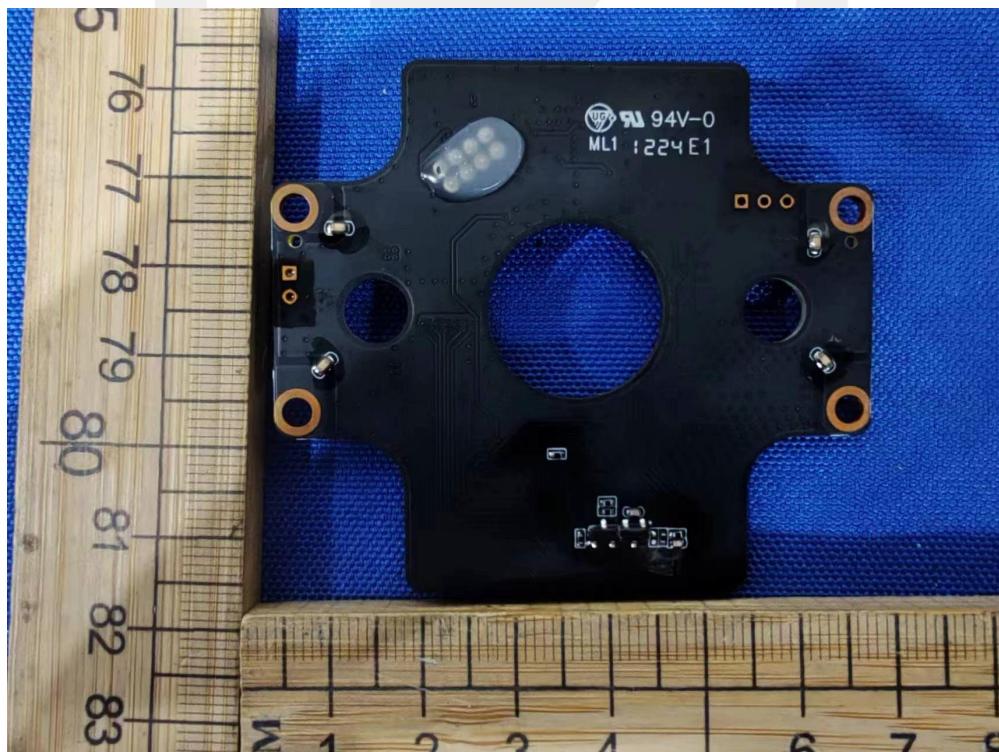
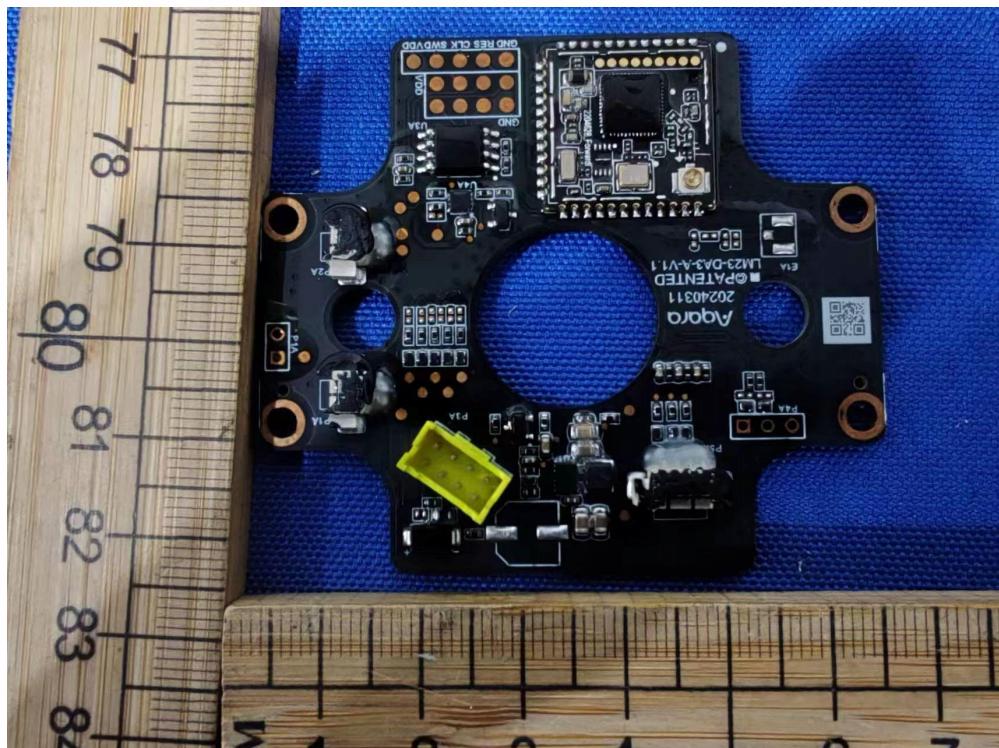




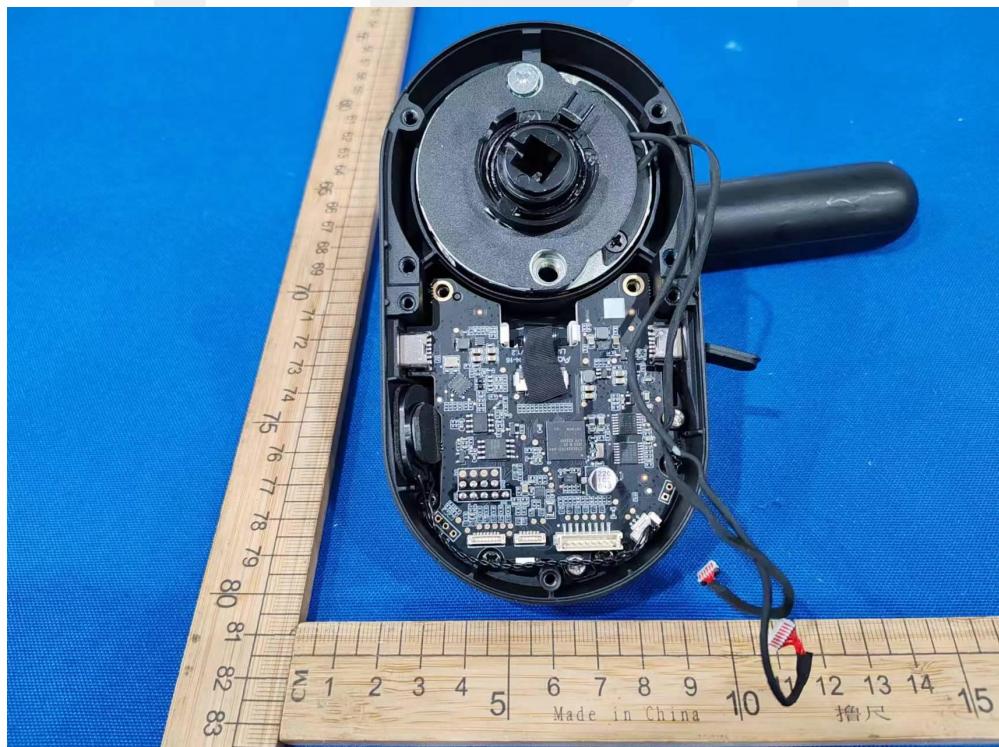


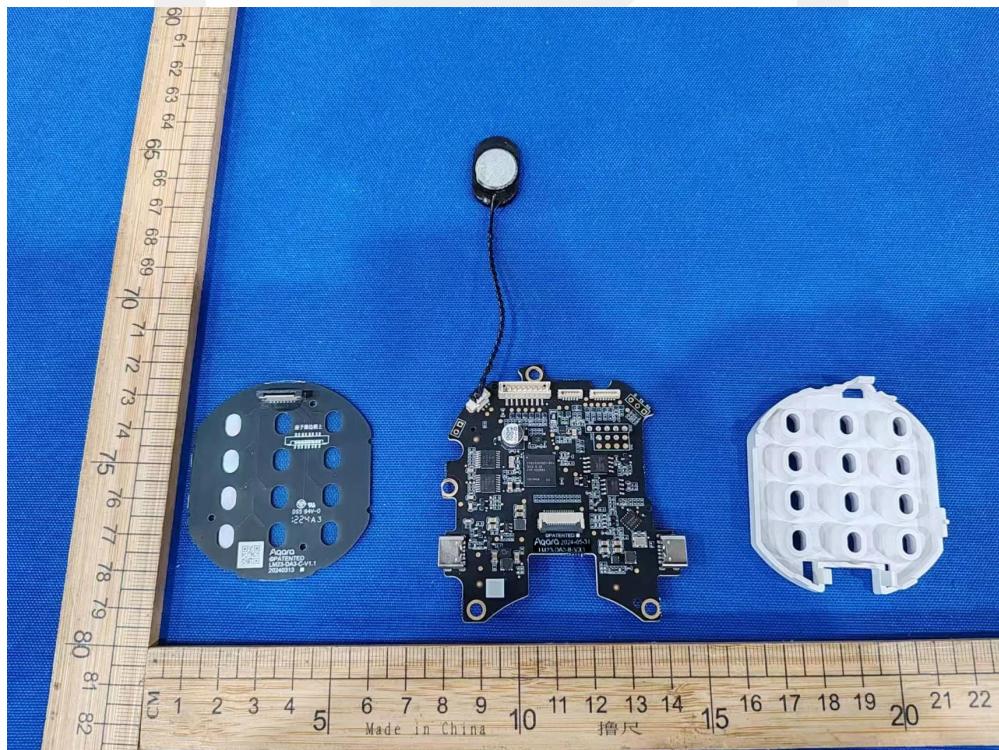


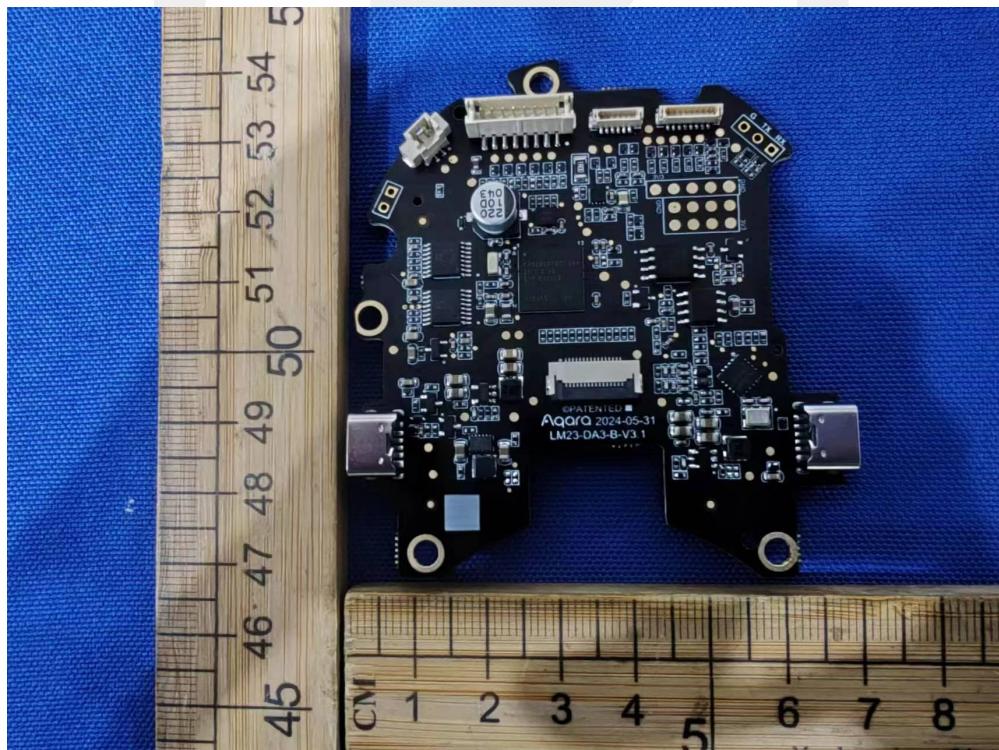
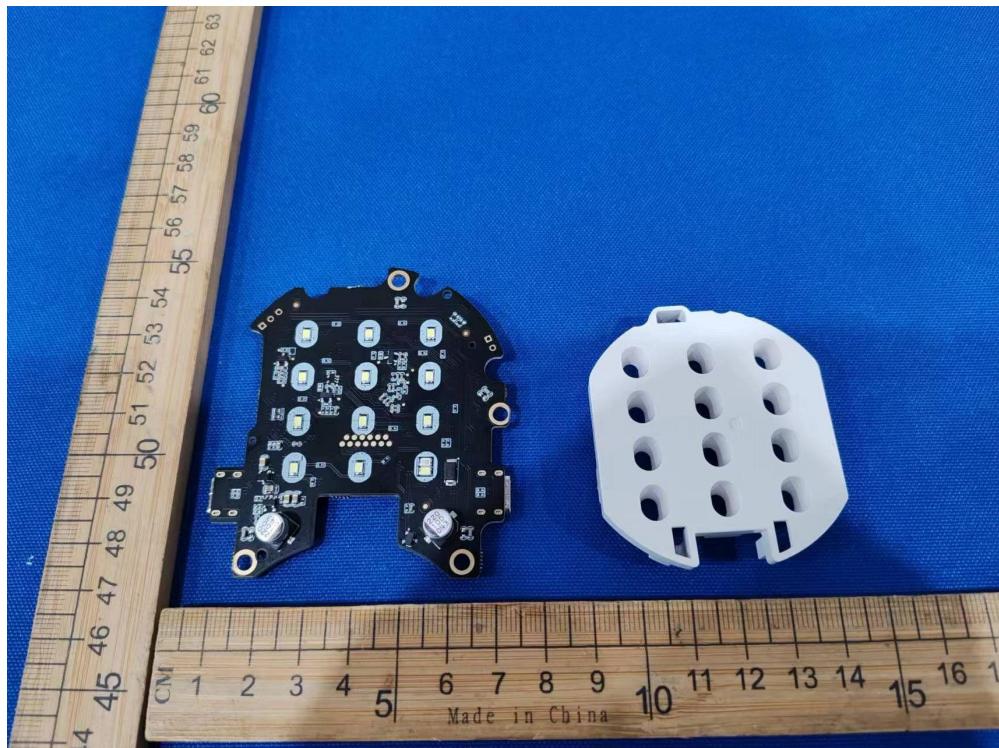


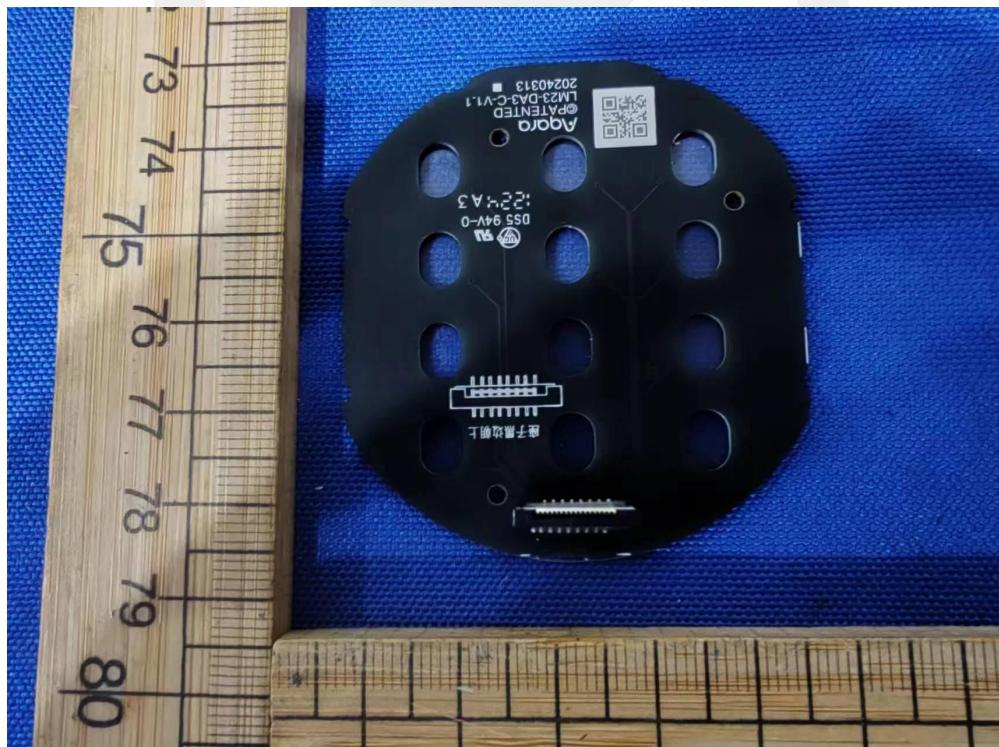
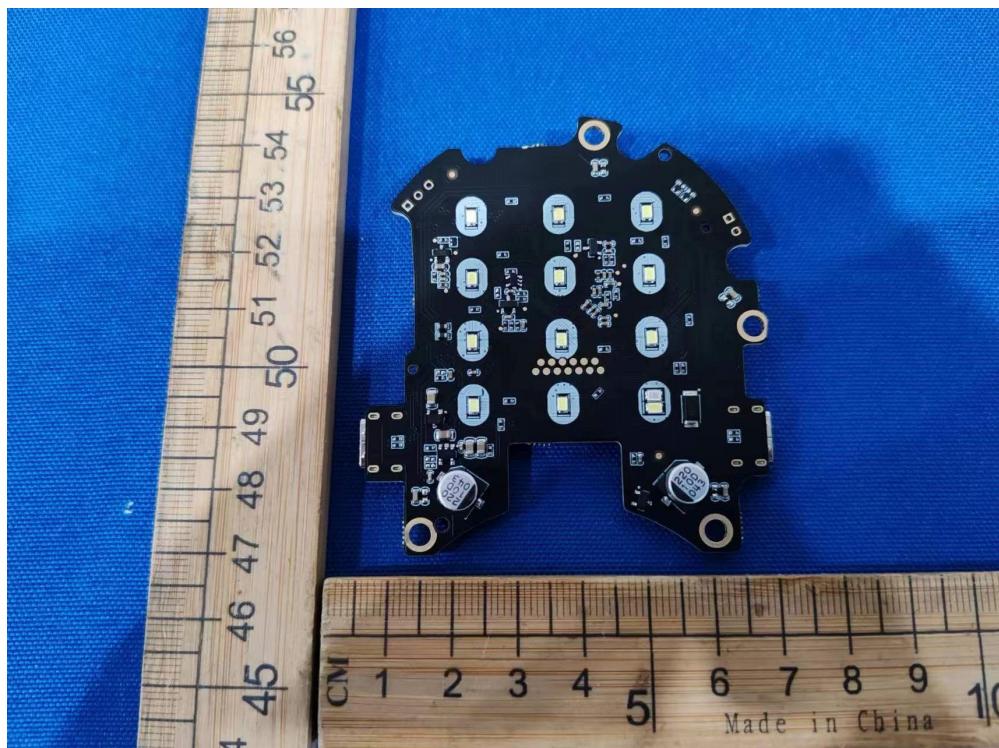


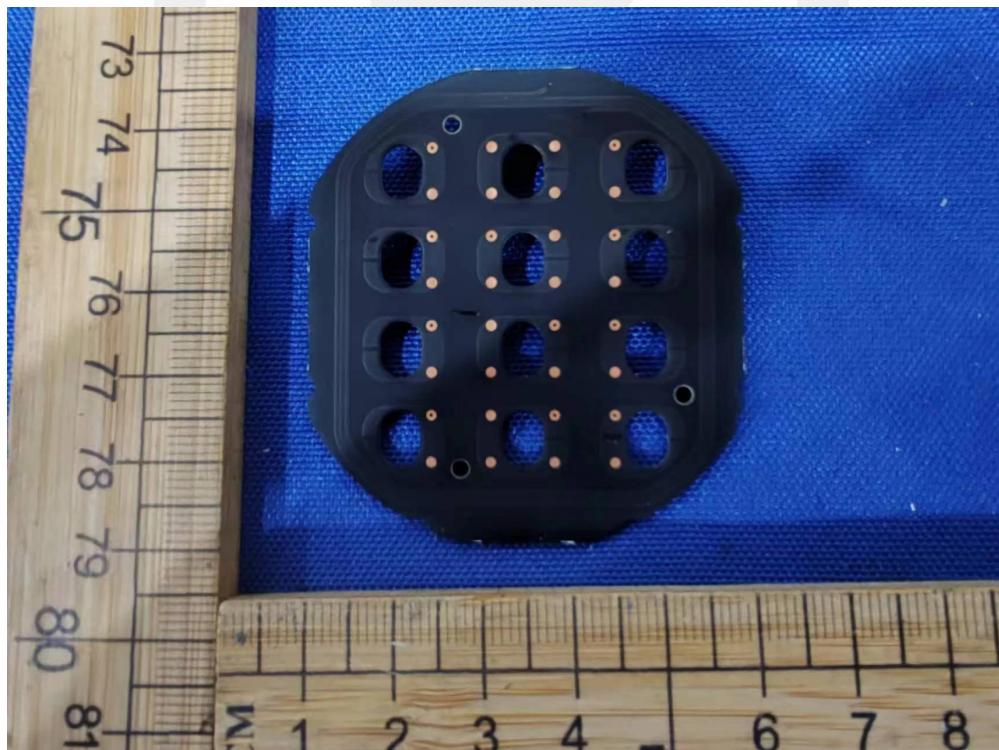
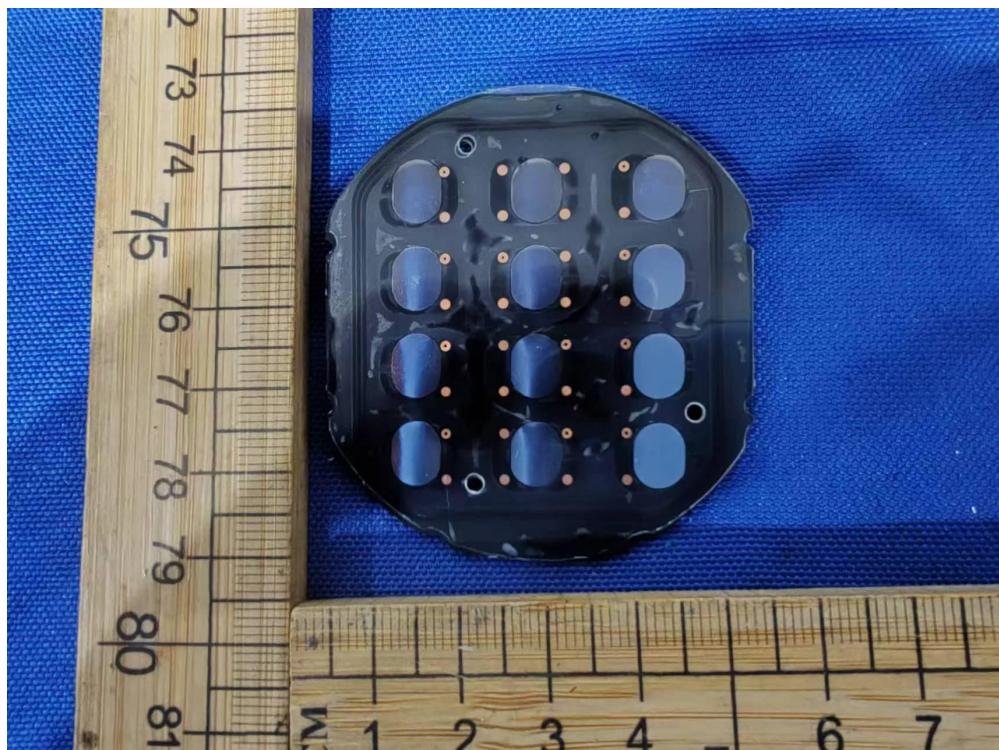












-----The end-----

# 声 明

## Statement

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Objections shall be raised within 20 days from the date receiving the report.